

Predictors of Congestive Heart Failure Events in Incident Patients on Hemodialysis – Results From the International MONDO Initiative

Viviane Calice-Silva¹, Jochen G. Raimann², Aileen Grassmann³, Daniele Marcelli³, Len Usvyat^{2,4}, Bernard Canaud³, Peter Kotanko², Roberto Pecoits-Filho¹ & the MONDO Consortium

¹Pontifícia Universidade Católica do Paraná, Curitiba, PR, Brazil

²Renal Research Institute, New York, NY, United States

³Fresenius Medical Care, Bad Homburg, Germany

⁴Fresenius Medical Care North America, Waltham, MA, United States

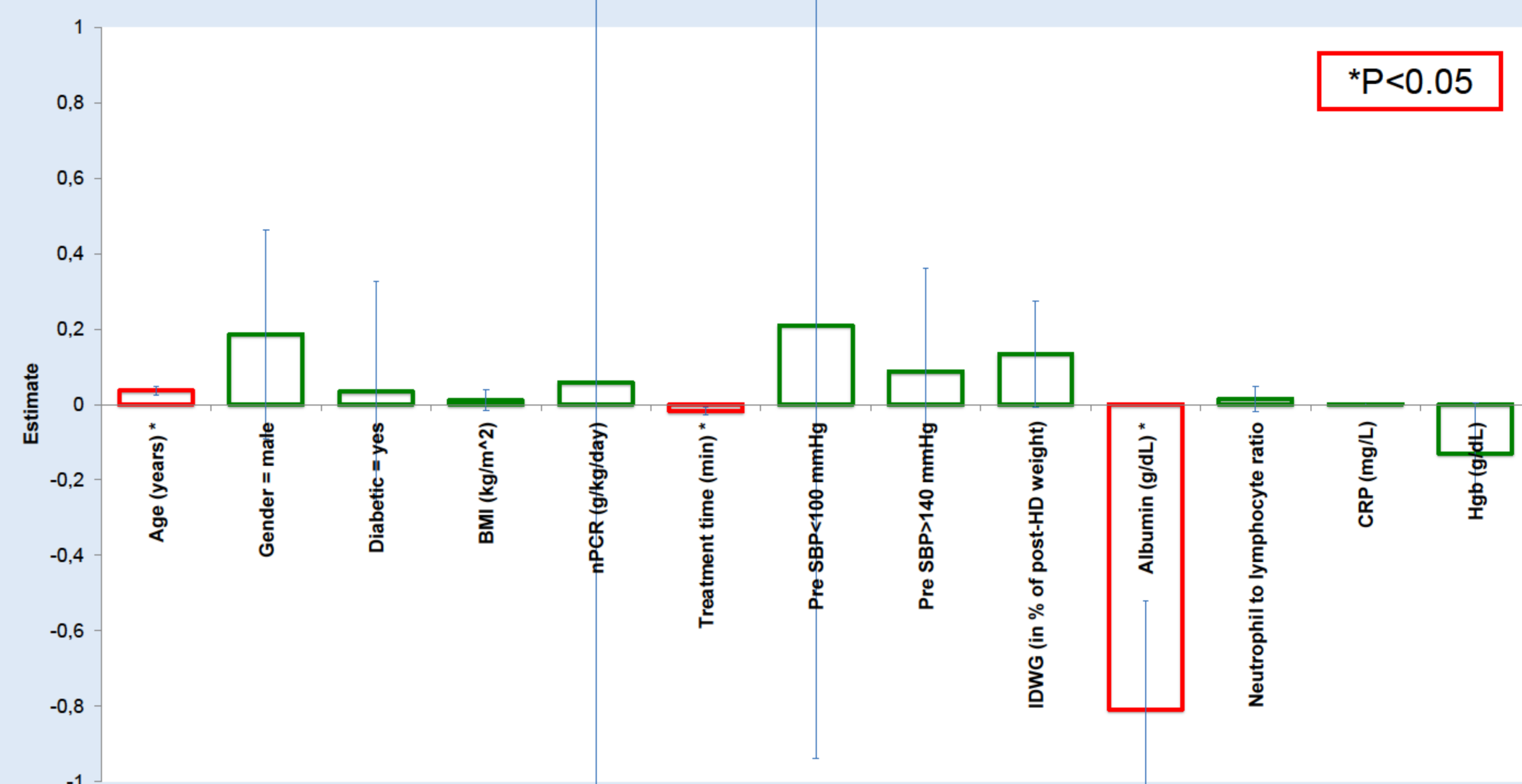
Introduction and Aims

- Congestive heart failure (CHF) has a high prevalence in chronic kidney disease (CKD) patients, particularly in those on hemodialysis (HD).
- Although CHF is clearly associated with high morbidity and mortality, predictors of CHF events have not yet been described in large multinational cohorts.
- The aim of this study was to explore predictors of non-ischemic CHF-related hospitalization and mortality in the MONitoring Dialysis Outcomes (MONDO) initiative.

Methods

- MONDO consists of HD databases from multiple dialysis providers {Usvyat, Blood Purif 2013; von Gersdorff, Blood Purif 2014}.
- We identified all incident patients in the database of Fresenius Medical Care Europe (including 17 countries) commencing in-center treatment between 1/2006 and 12/2012 and who survived at least one year on HD.
- Hospitalizations and causes of death were classified as non-ischemic CHF-related according to ICD-10 codes.
- Examples of non-ischemic CHF-related ICDs chosen were: cardiomyopathy, congestive heart failure, cardiogenic shock, dilated cardiomyopathy and others. Patients who simultaneously had any ICD codes pointing toward ischemic events were excluded.
- The averages of clinical and laboratory parameters were computed over the first 12 months (baseline), and hospitalizations and CHF-related clinical events (deaths and hospitalizations) were observed in the following 12 months (follow-up period).
- Poisson regression models were constructed to explore associations between baseline parameters and the number of CHF events in the follow-up period.

Figure 1. Poisson regression results: predictors of CHF-related events (hospitalization or death). BMI, body mass index; nPCR, normalized protein catabolic rate; SBP, systolic blood pressure; IDWG, interdialytic weight gain; CRP, C-reactive protein; Hgb, hemoglobin



Results

- We studied 11,644 patients (60% male, mean age [SD] 64.2 [14.7] years, 25% diabetic, mean body mass index (BMI) 26.4 [5.5] kg/m²).
- Older patients had a higher risk of non-ischemic CHF-related events. On the other hand, longer treatment time and higher albumin levels were associated with lower risk of CHF-related events.
- Inflammatory markers (C-reactive protein (CRP); neutrophil to lymphocyte ratio) were not associated with CHF events.

Conclusions

- In the European MONDO sub-cohort, younger age, higher serum albumin levels and longer HD treatment times were associated with lower risk of non-ischemic CHF-related hospitalization or mortality, while inflammatory markers and systolic blood pressure showed no association with these events.
- These findings may assist the screening for patients at high risk for CHF-related complications and help to define targets for interventions in HD patients with CHF such as dialysis treatment time and serum albumin levels.
- These concepts will need to be addressed in future studies with the appropriate design.